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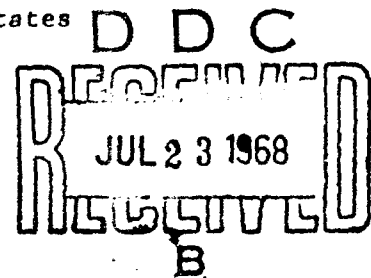
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DEPARTMENT OF THE ARMY  
Fort Detrick  
Frederick, Maryland

*T. H. Bell, Jr.*

APPLICATION OF ANTIBIOTICS TO THE B CEREAL LEAF  
BLIGHT OF RICE PLANT

Kyushu Kogyo Kenkyu  
(Kyushu Agricultural Research)  
No. 17, May 1956. Page 98

M. Saki of the Saga Prefecture  
Agricultural Experiment Station  
T. Mizukami of the Saga University,  
Agriculture Department

I. INTRODUCTION

Although the most effective bactericide in the control of rice plant leaf blight is copper, because of its damaging effect, it cannot be considered satisfactory. The authors have investigated the effect of antibiotics on the leaf blight bacteria and report two or three of their findings.

II. PERMEATION AND LASTING EFFECT OF ANTIBIOTICS ON RICE PLANTS

A Toscki variety which was previously prepared in a 2000 pot in a vinyl enclosure was used. On June 29, 20 cc each of a 100 fold solution of Nitroxylin (Nishino) were added to each pot. Then after 5, 10, 15, 20 and 33 days, 40 leaves from each were gathered. The results from the analysis of 10 cc of diluted juice according to 1 cm diameter hindered circle indicated that it was highest after five days and even after 15 days a minute amount was detected. Then on September 25th, using a pot of a Toscki variety under natural conditions, half the pointed ends of the stopped leaves were covered with vinyl and 20 cc each of Nitroxylin (Nishino) and Nitroxylin 200 ppm were added. After 24 hours, division was made into a covered section and its base as uncovered sections. Following the procedures as previously, the juices were collected. Using the hindered circle, the results from the determinations did not indicate the hindered circles as clearly as on the first occasion. However, the hindered circle could be distinguished in both instances and was evidence of the permeation of the material.

Using the same procedure as in the first case, after spraying a concentrated solution of rice blight bacterium, on the 5th, 10th, 15th, 20th and 30th days, 20 cc each of a 100 fold solution of Hitomycin was added. Twenty four hours after addition, 30 leaves each were gathered, the wash solutions were centrifuged for 10 minutes at 3000 rpm, the solution decanted and 50 leaves of a previously treated Toseld variety was inoculated with a multiple needle system. Furthermore after 17, 27, 32, 37 and 42 days application of the antibiotics, the same procedures were repeated with an average of 40 leaves being inoculated. The results are presented in Table 1 and 2.

			I	II	III	平均 (5)
(1) 地区	(3) 接种区	5	0.0	8.9	15.5	8.1
		10	19.3	22.6	19.3	20.4
		15	0.0	0.0	0.0	0.0
		20	24.1	32.8	34.6	30.5
		33	9.6	10.1	7.0	8.9
(2) 地区	(4) 对照区	5	38.1	52.4	42.5	44.3
		10	56.5	54.7	55.2	55.5
		15	62.4	61.7	63.4	62.5
		20	63.2	78.5	72.8	71.5
		33	69.4	77.9	72.7	73.3

Table 1. Bacterial Growth Immediately After Application of Antibiotic

- |   |               |
|---|---------------|
| 1) Antibiotic Applied                       | 4) Comparison |
| 2) Not Applied                              | 5) Average    |
| 3) Day Antibiotic Applied After Inoculation |               |

### III. TRIAL APPLICATION ON FIELDS

On July 26, at Fujitsu district, Taracho, on plots of 6 sections of 3 tans (tan = 0.25 acres), Hitomycin and Agrimycin at 100 ppm; Cu-amalgam (Nissan Co.), 12 momme (momme = 0.13 oz.) per one to (4.8 gal.) of water were each spread. Six to's were applied to each tan. The second application was made on August 8, spreading 8 to's per tan. Analysis of blight occurrence on 100 stalks was made on August 8; the second analysis was made on September 20. Results indicated that there were differences in the area; however, on first analysis the effectiveness was in the order Hitomycin, Agrimycin, Cu-amalgam with 1% intentional difference. The second analysis indicated the same tendency as the first; however the difference was not intentional.

			I	II	III	平均(5)
(1)	対照	(3)	42	31.5	23.0	28.2
	15日	対照	37	11.5	14.5	12.2
	17日	対照	22	11.5	16.5	14.4
	19日	対照	27	21.2	14.5	18.8
	21日	対照	17	0.0	0.0	0.0
(2)	対照	(4)	42	35.7	57.4	31.7
	15日	対照	22	52.9	57.0	50.0
	17日	対照	17	50.2	41.0	63.2

(6) 備考: 数字に凡例を Bliss 換算した。

Table 2. Bacterial Growth After Fixed Number of Days After Antibiotic Application

- 1) Antibiotic Applied
- 2) Not Applied
- 3) Days After Antibiotic Application
- 4) Comparison
- 5) Average
- 6) Note: The numbers are the rate of blight occurrence after a Bliss Conversion

#### IV. SUMMARY

1. Permeation of antibiotics in rice plants was found. It seemed that the effect lasted approximately 15 days.

2. From an application of antibiotics after inoculation with blight bacteria, the growth of bacteria was repressed. The effect was best up to 17 days and appeared to arrest growth more than a month.

3. Experiments at the actual site indicated effectiveness in the order Kitomycin, Agrimycin, Cu-amalgam. This requires further investigation.